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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,767	08/28/2003	Masaki Takai	241959US0	5868
22850	7590	03/21/2006	EXAMINER KEYS, ROSALYND ANN	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			ART UNIT 1621	PAPER NUMBER
DATE MAILED: 03/21/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/649,767	TAKAI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Rosalynd Keys	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 2/17/06.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 7-16, 18-26 and 30-32 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 7-16, 18-26 and 30-32 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Status of Claims*

1. Claims 7-16, 18-26 and 30-32 are pending.

Claims 7-16, 18-26 and 30-32 are rejected.

Claims 1-6, 17 and 27-29 are canceled.

### *Continued Examination Under 37 CFR 1.114*

2. A request for continued examination under 37 CFR 1.114 was filed in this application after appeal to the Board of Patent Appeals and Interferences, but prior to a decision on the appeal. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on February 17, 2006 has been entered.

### *Claim Objections*

3. Claim 15 is objected to because of the following informalities: in line 2 the word hydroxaryl should be changed to hydroxyaryl. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 7-16, 18-26 and 30-32 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The claims include the limitation "wherein the oxygen nucleophilic agent is not the same as the monodentate phosphite compound". However, this limitation is not

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supported in the original disclosure. The claims also include the limitation "at least two of R1, R2 and R3 bond to each other to form a cyclic structure containing oxygen". This limitation is not supported in the original disclosure because it limits the cyclic structure to those containing oxygen and this concept is not supported in the original disclosure. Further, in claim 24, the limitation "in which A is a hydrogen atom or an organic group having a carbon atom, a nitrogen atom, a phosphorous atom or a sulfur atom bonded to an oxygen atom" is not described in the original disclosure. The original disclosure describes the carbon atom, nitrogen atom, phosphorous atom, or sulfur atom being bonded to the nucleophilic oxygen atom (see page 15, lines 7-10). The amended claim 24 allows for an oxygen atom other than the nucleophilic oxygen atom to be attached to the carbon atom, nitrogen atom, phosphorous atom or sulfur atom. However, this concept is not described in the original disclosure.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 7-16, 18-26 and 30-32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

On page 3, line 2 of the amendment to claim 7 filed February 17, 2006 the Examiner is unclear of what the phrase "hereinafter the same" is referring to.

8. Claim 16 recites the limitation "formula (I)" in line 2. There is insufficient antecedent basis for this limitation in the claim. Claim 7, from which claim 16 depends, does not contain the Roman numeral I in its formula.

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 7-9, 14, 16, 18, and 22 are rejected under 35 U.S.C. 102(b) as being anticipated by Pachamuthu et al. (Tetrahedron Letters, Volume 39, May 1998, pp. 5339-5442).

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Pachamuthu et al. teach reduction of a compound having the claimed formula (a) with the HCOOH-Et<sub>3</sub>N combination in the presence of Pd(OAc)<sub>2</sub> and triisopropyl phosphite as a ligand (see page 5440).

11. Claims 7-9, 14, 18, 22, 24, 30, 31 and 32 are rejected under 35 U.S.C. 102(b) as being anticipated by Woo (US 4,567,005).

Woo teaches allylation of carbon acids comprising reacting the carbon acid with an allyl carbonate in the presence of a metal catalyst selected from the group consisting of molybdenum, tungsten, cobalt, ruthenium, rhodium, osmium, iridium or platinum catalyst (see entire disclosure, in particular column 1, line 60 to column 3, line 31). The catalysts of Woo's invention form complexes with ligands such as phosphite (see column 2, lines 49-60). Example 1 discloses reaction between allyl methyl carbonate [a compound having the claimed formula (a)] and methyl cyanoacetate [an oxygen nucleophilic agent] in the presence of tetrakis(triethylphosphite)nickel (0) [a monodentate phosphite compound having the claimed formula (1) and a transition metal belonging to Group 8 of the Periodic Table]. The product produced is methyl-2-allyl-2-cyano-4-pentenoate [a second allyl compound].

12. Claims 7-9, 11, 14, 15, 18, 22-24, and 30-32 are rejected under 35 U.S.C. 102(b) as being anticipated by Trost et al. (US 4,051,157).

Trost et al. teach alkylation of an allylic carbon-oxygen bond (alcohol, ether, or ester) with a nucleophile in the presence of a palladium catalyst (see entire disclosure, in particular column 1, lines 15-66 and the claims). The reaction can take place in the presence of a trialkyl phosphite such as trimethyl phosphite (see column 3, lines 34-49). The nucleophiles include carbon, nitrogen and oxygen nucleophiles (see column 4, line 50 to column 5, line 30).

### ***Claim Rejections - 35 USC § 103***

13. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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14. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

15. Claims 7 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Woo (US 4,567,005).

Woo teaches the invention as disclosed above but fail to teach the use of a palladium catalyst. Woo does however teach the use of other Group VIII metals as the catalyst. One having ordinary skill in the art at the time the invention was made would have found it obvious to substitute palladium for one of the other Group VIII metal catalysts disclosed as useful in Woo's invention, since compounds, which belong to the same group of the Periodic Table, are expected to have similar properties.

16. Claims 7-10, 16, 18, 22, 24, 25, 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arend et al. (US 4,017,564).

Arend et al. teach preparing (meth)allyl phosphonic acid dialkyl esters comprising reacting allyl chloride or methallyl chloride with a phosphorus acid trialkyl ester of the formula  $P(OR')_3$  wherein  $R'$  is a straight-chain or branched, optionally halogen-substituted alkyl radical having up to 4 carbon atoms in the presence of a nickel catalyst (see entire disclosure, in particular column 1, line 66 to column 2, line 35).

Arend et al. differ from the instant claims in that Arend et al. do not teach that the phosphorus acid trialkyl ester may also be used as a catalyst in the reaction. However, the amounts utilized by Arend et al. are sufficient for its use as a catalyst. Thus, although it is not disclosed as being useful as a catalyst, its use as a catalyst is implied.

17. Claims 7-26 and 30-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kurtz et al. (US 3,755,451) alone or in view of Bryant et al. (US 3,534,088) or Hefner, Jr. (US 4,613,703).

Kurtz et al. clearly suggest exchange reactions between allylic compounds and active hydrogen containing compounds (XH compounds) in the presence of a catalyst such as platinum, palladium, ruthenium and the like along with modifiers which include trialkylphosphites (see entire disclosure, in particular column 4, line 13 to column 9, line 27). Thus, although Kurtz et al. do not exemplify the claimed phosphite compounds they are clearly suggested and therefore their use would have been obvious to one having ordinary skill

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in the art at the time the invention was made. Kurtz et al. teach that the reaction is generally applicable to allylic compounds regardless of the nature of the allylic substituent (see column 2, lines 16 and 17).

Kurtz et al. further do not exemplify the use of an ammonium or phosphonium compound. However, Kurtz et al. teach that the catalyst of Bryant et al. is active for promoting the exchange reaction (see column 4, lines 47-51). Bryant et al. teaches that an ammonium compound is useful as a source carboxylate ion in their catalyst (see entire disclosure, in particular column 3, lined 39 to column 4, line 15). One having ordinary skill in the art at the time the invention was made would have found it obvious to include an ammonium compound in the catalyst of Kurtz et al., since Bryant et al. teach that the addition of a carboxylate ion to the catalyst is beneficial (see column 3, lines 39-47).

Hefner, Jr. teaches allylation of a hydroxyaromatic compound with an allyl halide in the presence of a quaternary salt catalyst (see entire disclosure, in particular the summary of invention and claims 1-3).

One having ordinary skill in the art at the time the invention was made would have found it obvious to utilize an ammonium or phosphonium salt catalyst, as taught by Hefner, Jr., in the process of Kurtz et al., since Hefner, Jr. teaches that use of such catalyst, in a process wherein a hydroxyaromatic compound is reacted with allyl chloride, would allow one to obtain diallylated products in higher yields with higher conversions of the hydroxyaromatic reactants (see column 3, lines 15-33).

### *Response to Arguments/Remarks*

#### Applicants remarks

18. The Applicants make the following statement on page 9 of their remarks filed February 17, 2006 "The Examiner's concern was that when R1, R2 and R3 were joined that they may form a phenyl group and tri-phenyl substituted phosphites were indicated as having relatively low activity in Tables 1 and 2. Claim 7 has now been revised to clarify its last wherein clause and preclude R1, R2 and R3 from being groups such as phenyl". The Examiner does not recall making such a statement, especially in light of the fact that the Examiner recognized that R1, R2 and R3 were not phenyl groups (see Interview Summary, dated October 18, 2005, wherein the Examiner states "other phosphite compounds not encompassed by the claimed invention, such as triphenyl phosphite". Nonetheless to make the record clear, the Examiner does not believe that the limitation "or at least two of R1, R2

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and R3 bond to each other to form a cyclic structure” includes compounds wherein R1, R2 and R3 are phenyl groups.

Claim Rejections - 35 USC § 112

19. Applicant's arguments filed February 17, 2006 have been fully considered but they are not persuasive. The new matter rejection in the final office action, mailed July 12, 2005 was based upon the limitation “wherein the oxygen nucleophilic agent is not the same as the monodentate phosphite compound”. Thus, simplifying the last clause did not remedy the presence of new matter.

For the above reason, this rejection is maintained.

Claim Rejections - 35 USC § 103

20. Applicant's arguments filed February 17, 2006 have been fully considered but they are not persuasive.

The Applicants argue that Arend et al. use the phosphite as a substrate and not as a catalyst. This argument is not persuasive because as discussed in the previous office action the amount of phosphite utilized by Arend et al. is enough for the phosphite to be useful as a catalyst. Further, the claims do not exclude the phosphite from being both the catalyst and the substrate. The Applicants arguments concerning the newly added limitation “wherein the oxygen nucleophilic agent is not the same as the monodentate phosphite compound” is not persuasive because this limitation is not supported in the original disclosure and is therefore considered new matter. For the above reasons the Examiner believes that the claims 7-10, 16, 18, 22, 24, 25, 30-32 are not patentable over Arend et al.

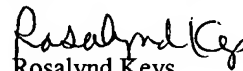
The Applicants argue that Kurtz et al. do not suggest selection of specific phosphites of the formula (1). The Examiner disagrees. Kurtz et al. explicitly names phosphites of the formula (1). See column 8, line 54 to column 9, line 10. The showing in Table 1 and 2 is not sufficient to overcome the rejection because it is not commensurate in scope to the protection sought. The Applicants argue that Bryant also does not provide any suggestion or reasonable expectation of success for the claimed process. The Examiner disagrees. Bryant provides the motivation to utilize an ammonium compound with the claimed catalyst, i.e., higher yields, improved selectivity and catalyst stability. For the above reasons the Examiner believes that claims 7-24, 26 and 30-32 are not patentable over Kurtz et al. alone or in view of Bryant et al.

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21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rosalynd Keys whose telephone number is 571-272-0639. The examiner can normally be reached on M-W & F 4-10pm; H 5:30am-5pm; Sat 8am-1pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann Richter can be reached on 571-272-0646. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Rosalynd Keys  
Primary Examiner  
Art Unit 1621

March 13, 2006